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Raw material, gestures, artefacts. An approach to the work of bone and ivory in the Iron Age in the Iberian peninsula

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ABSTRACT

This work seeks to give visibility to the industry of hard animal materials that is documented during the Iron Age in the Iberian peninsula. We focus on the analysis of three common artefacts within the bone and ivory industry in the Iberian culture (between the 6th to the 1st Century BC): pins, perforated plates and combs. We have studied these objects from a technological point of view, thanks to a series of experimental work carried out in order to meet different operational chains, necessary to manufacture each one of these items and tools that could be used for this purpose. So, we searched the archaeological tool models to work bone and ivory, and whenever it has been possible, we have reproduced them. We have paid special attention to the results that may be obtained with different tools, gestures made, different time and effort employed according to the raw material, the tool made and the importance of the "hands" that lie behind the products, thus considering the role of the craftsman who carried out each one of these works. The questions raised in this research are: Is the manufacture of this type of pieces a specialized work, or anyone with access to the right tools could do it? Did it all depend on the raw materials employed?

Were there local workshops on equipment manufacture with bone and ivory?

This is a necessary study that focuses on analysis of pieces omitted by the archaeological research and, moreover, approaching its study not from a descriptive or typological point of view, but focusing on the manufacturing and operational chains processes, giving special importance to the role of the craftsmanship behind these objects. For all of this, experimentation has provided us with essential information that should be properly contrasted with the archaeological record.

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1. Introduction

The theoretical and methodological advances that have occurred in archaeology during the last years of the 20th century, have made it possible to deal with the study of the Ancient World from a wide range of approaches. After the boom of the research on

landscape and territory, the smallest scale of territorial analysis, i.e. the domestic spaces and the activities that were carried out in them is a priority.

In this work, we will present the results of a serie of experiments carried out in order to approach the operational chain from manufactures of plates, pins and combs made of bone and/or ivory. The used tools have been recreated with traditional techniques, whenever it has been possible. On the other hand, through the analysis of the typological and technological aspects of manufactured products, we approach the "hands" that created them (Calvo and García Roselló, 2014) and, therefore, we also approach the knowledge of the work performed: techniques, gestures and tools.

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We want to deep in the role of the craftsmen who carried out each one of these artefacts and think about if the manufacture of this type of products are a specialized work or anyone with access to the appropriate tools could do it. Experimentation has provided us with essential information that have been properly contrasted with the archaeological record.

2. About the Iberians

Iberians is the term that classical sources used to denominate the native pre-Roman inhabitants of the western Mediterranean region. This region begins in Andalusia (Spain), spreads up to the Hérault River (France) and takes in some of the interior parts of the Ebro basin (Spain) between the 6th and the 1st century BC. The concept of Iberian Culture is thus archaeological in nature. It is widely accepted that the people involved had developed a high level of urbanisation, complex and complementary economic strategies (agricultural practice, siderurgy, livestock breeding, crafts, etc), varying scales of trade and exchange, standardised funerary rituals, elite levels of society, and independent socio-political territories based on hierarchical urban societies (Bonet-Rosado and Mata-Parreño, 2014; Ruiz Rodríguez and Molinos, 1998).

3. Material and methods

This study has as a main goal to know if the manufacture of bone and ivory objects during the Late Iron Age in the Iberian Peninsula was a domestic work or a specialized work. One way to find out is to get close to the estimated time of manufacturing of each piece and the specialized tools used. Consequently, this work is a first approximation to accomplish more experiments with a deeper traceological study in the future (Tichy, 2005). We have reproduced three original artefacts that we have previously analysed and described. We have taken into account the archaeological tools and, as long as it has been possible, we have reproduced them with traditional and artisanal techniques. The artefacts have been photographed with Optical microscope SMZ (NIKON) 10× to 120× and a digital microscope (DM) Dino-lite mod. AM7115MZT EDGE from 10× to 200× with incident light by means of a fiber optic illuminator equipped with software with integral measurement functions for high precision images. The different steps of the work process have been recorded on video. We have developed the three levels of experimental strategies proposed by Lammers-Keijsers (2005, p.21) expecting to expand the number of artefacts recreated.

3.1. The artefacts

The artefacts chosen for the process of bone and ivory work for this approach have been perforated plates, pins with zoomorphic heads and combs, artefacts which stand out for their quality and cultural significance according to their raw materials or decoration. Two of them, the perforated plates and pins are well known in the Late Iron Age of the Iberian peninsula from the formal, stylistic and functional point of view, but not so much in terms of their manufacturing, from which new readings are derived. The third one, combs, have been quite unnoticed in the investigation concerning this time, unlike what happens with the previous periods (Castro, 1988; Le Meaux, 2010).

The perforated plates are rectangular, flat or slightly concave pieces of bone with one, two or three rows of longitudinal holes and two perforations of higher dimensions that can be at their endings. They can be decorated. The context where they appear is mainly funerary between the 4th and the 2nd century BC and, traditionally,

these objects have been identified with looms (Leroi-Gourhan, 1988, pp. 263–265). For this work, we have selected a plate from the *oppidum* of La Bastida de les Alcusses (Moixent, Valencia), from the 4th century BC (Fletcher et al., 1965, pp. 226–227; Bonet et al., 2011, p. 168, Fig. 32) (Figs. 1 and 2.1).

The pins are elongated and pointed objects without perforation, usually decorated in the proximal part and, sometimes, in the medial, presenting a wide morphological and decorative. Made above all in bone, and sometimes in antler, ivory, metal and wood. Different archaeological testimonies and classical sources show their relationship with the feminine hair ornament and fastening (Daremberg and Saglio, 1877–1918, *acus*, pp. 239–240; Marcial, *Ep. XIV*, 24), although they could also be used to hold garments (Pérez Roldán, 2013, pp. 122–124). Their finding is common in settlements, necropolis and, to a lesser extent, shrines, between the 4th and the 2nd century BC. We have selected a pin from Edeta/Tossal of Sant Miquel (Llíria, Valencia) with its head carved in the form of a bird, i.e., a pin with an average degree of complexity in its production. It is dated between the end of the 3rd and early of 2nd century BC (Bonet, 1995, p. 401, Fig. 49) (Figs. 1 and 2.3).

Combs are plates of ivory or wood (only three wood combs are documented in the Late Iron Age in Iberian Peninsula), rectangular or trapezoidal, presenting a row of teeth of variable length at one or both ends; and linked to the toiletries and personal aesthetics. Most of the Late Iron Age combs have been found in settlements, except for one from a necropolis. They have incised and carved decoration with geometric and/or figured character (vegetable or zoomorphic). Here we will focus on ivory's combs (3rd century - beginning 2nd century BC). We have decided to recreate one of LAlcúdia (Elx, Alicante) (Ramos Folqués, 1956, p. 113, lam. CXIX) (Figs. 1 and 2.2, Table 1).

3.2. Raw material

The perforated plates, the pins with zoomorphic head and the combs, were performed on bone and ivory.

Bone is the most accessible and used raw material. However, it is not always possible to identify the species and the anatomic part used to make an artefact by the transformation undergone. So far, we have been able to identify the preferential use of long bones of the appendicular skeleton (humerus, ulna, radius, femur, tibia, metatarsus, metacarpus) of medium and large size mammals (*Ovis aries*, *Capra hircus*, *Equus caballus*, *Cervus elaphus*, *Bos taurus*, *Sus sp.*, *Capreolus capreolus*) (Mata, 2014).

Any kind of ivory has an extra peninsular origin, but its presence is documented in both aspects, processed and raw material since Chalcolithic (Pascual Benito, 1998, p. 224; López Padilla, 2011, pp. 322–328; Schuhmacher and Banerjee, 2012). We are aware of the behavioral differences when working ivory and bone, but the use of the last, for its similar chemical composition, it is a good resource to make a first approximation to the difficulty of manufacturing an ivory comb. Moreover, it is not possible to have access to ivory because of the international laws of protection of this raw material (1989, CITES, Convention on International Trade in Endangered Species of Wild Fauna and Flora; in Spain, Real Decreto 1739/97, de 20 de noviembre, sobre medidas de aplicación del Convenio sobre el Comercio Internacional de Especies Amenazadas del Fauna y Flora Silvestre –CITES–). In an analogous way, on a published paper in 2016 the original deer antler was replaced by bone to reproduce two combs (Picod et al., 2016, p. 38).

In our study, we have made both the pin with zoomorphic head like the perforated plate, on a humerus of *Bos taurus*. On the other hand, we have recreated a comb from a *Bos taurus* femur too.

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